IN THE SPECIFICATION

Please amend the specification paragraph starting on page 7 line 16 as follows:

16 (f) using an oscillometric signal to calibrate tonometric pressure signals in a contralateral

17   arterial site.

18

19 In some embodiments, a calibrated radial pressure waveform $P_r(t)$ is derived from the

20 tonometric signal $S_r(t)$ as follows:

21

22 $P_r(t)=(1/a_r)(S_r(t)-b_r)+ p$

23

24 where $a_r = (S_r(t_D)-S_r(t_M)) / (DBP-MBP)$,

25 $b_r = S_r(t_M) - a_r\ MBP$, and

26 $p=\rho\ gh$ are calibration factors, and where

27        $\rho =$ density of blood,

28        $g =$ acceleration to gravity,

29        $h =$ height difference between the oscillometric and the tonometric measurement

30   sites, and is zero if the patient is supine,

31   MBP is oscillometric mean arterial blood pressure measured at time t_M, and

32   DBP is oscillometric diastolic blood pressure measured at time t_D .

Please amend the specification paragraph starting on page 11 line 2 as follows:

2   In some embodiments, two pressure points are needed for calibration. In one

3   such embodiment, MBP (mean arterial blood pressure) and DBP (diastolic blood

4   pressure) are chosen, and respective corresponding times t_M and t_D (shifted to the

5   appropriate time within a cardiac cycle, e.g., t_D is shifted to the nearest pulse minimum)

6   are used:

7     $S_r(t_M) = a_r \ \ MBP + b_r$

8     $S_r(t_D) = a_r \ \ DBP + b_r$

9              $a_r = (\ S_r(t_D)\text{-}S_r(t_M)\ )\ /\ (\ DBP\text{-}MBP\ )$

10             $b_r = S_r(t_M) - a_r \ \ MBP$

11   The radial artery is approximately six inches below the brachial artery. This creates a

12   hydrostatic pressure head that can be accommodated by a further pressure head correction

13   factor of $p = \underline{\rho}$ gh, where

14    $\underline{\rho}$ = density of blood (= 1.03 g/cm^3)

15   g = acceleration to gravity (= 980 cm/sec^2)

16   h = 6" 15 cm

17   thus   p   = 1.03 g/cm^3 980 cm/sec^2 15 cm = 15141 g/cm sec^2

18   11 mm Hg if sitting (or 0 if supine)

19   and the calibrated radial pressure waveform $P_r(t)$ is derived from the Radial Signal $S_r(t)$

20   as follows:

21

22    $P_r(t) = (1/a_r)(S_r(t)\text{-}b_r) + p$

PRELIMINARY AMENDMENT   **Page 4**
Filed: February 17, 2004   Docket No.: 120.020US2
Title: METHOD AND APPARATUS FOR CALIBRATING AND
                  MEASURING ARTERIAL COMPLIANCE AND STROKE VOLUME

Please amend the specification paragraph starting on page 13 line 11 to add a small space between r and t in the equation to avoid confusion with π (pi) as follows:

11   <u>Examples</u>

12    $f_{infl}(t) = k \Rightarrow n_c(t) = n_o + kt$

13   (inflation)

14   ~~$f_{defl}(t) = kn_c \Rightarrow n_c(t) = n_o + (n_{max} - n_o)^{-rt}$~~

$$\underline{f_{defl}(t) = kn_c \Rightarrow n_c(t) = n_o + (n_{max} - n_o)e^{-r\,t}}$$

15   (deflation)

16   Constant r can be obtained for a particular oscillometric device as

17    $r = -\dfrac{1}{t_{.01}} \ln \dfrac{0.01 n_o}{n_{max} - n_o}, t_{.01} x$

18   time to 99% complete deflation.

Title: METHOD AND APPARATUS FOR CALIBRATING AND
                MEASURING ARTERIAL COMPLIANCE AND STROKE VOLUME

Please amend the specification paragraph starting on page 15 line 1 as follows:

1   Using this signal, identify the peaks and nadirs of the individual pulses using a preferred

2   algorithm (e.g., as in the ~~'133~~ '313 patent).

Please amend the specification paragraph starting on page 21 line 16 as follows:

16   We obtain stroke volume as

17

18   *Equation (15):* $SV = \int flow(t)dt = \int A(t)v(t)dt \approx \sum t_{n=1,N} A[n]v[n]$

19

20   where $A(t)$ is ascending aortic cross-sectional area as a function of time, $v(t)$ is ascending

21   aortic blood velocity as a function of time, $A[n]$ and $v[n]$ are the corresponding sampled

22   data values, t is the sampling interval, and N is the number of data points in a single

23   cardiac cycle. Here the integral is approximated with a simple sum, but any appropriate

24   numerical integration could be used to obtain higher precision (e.g. a high-order Newton-

25   Cotes). $A[n]$ and $v[n]$ are obtained as

26

27   *Equation (16):* $A[n] = {}_i h_A[n-i]P_2[i]$

28   *Equation (17):* $v[n] = {}_i h_v[n-i]P_2[i]$

Please amend the specification paragraph starting on page 25 line 6 as follows:

6   In some embodiments, the first method further includes (f) using an oscillometric

7   signal to calibrate tonometric pressure signals in a contralateral arterial site.

8   In some embodiments, a calibrated radial pressure waveform $P_r(t)$ is derived from the

9   tonometric signal $S_r(t)$ as follows:

10   $P_r(t)=(1/a_r)(S_r(t)-b_r)+ p)$

11   where $a_r = (S_r(t_D)-S_r(t_M)) / (DBP\text{-}MBP)$,

12   $b_r = S_r(t_M) - a_r\ MBP$, and

13   p=ρ gh are calibration factors, and where

14   ρ =   density of blood,

15   g =   acceleration to gravity,

16   h =   height difference between the oscillometric and the tonometric measurement sites,

17   and is zero if the patient is supine,

18   MBP is oscillometric mean arterial blood pressure measured at time t_M, and   DBP is

19   oscillometric diastolic blood pressure measured at time t_D .

PRELIMINARY AMENDMENT   **Page 8**
Filed: February 17, 2004   Docket No.: 120.020US2
Title: METHOD AND APPARATUS FOR CALIBRATING AND
                    MEASURING ARTERIAL COMPLIANCE AND STROKE VOLUME

Please amend the specification paragraph starting on page 27 line 5 as follows:

5   In some embodiments, the computer derives a calibrated radial pressure

6   waveform $P_r(t)$ from the tonometric signal $S_r(t)$ as follows:

7   $P_r(t) = (1/a_r)(S_r(t) - b_r) + p$

8   where $a_r = (S_r(t_D) - S_r(t_M)) / (DBP - MBP)$,

9   $b_r = S_r(t_M) - a_r \; MBP$, and

10   $p = \rho\, gh$ are calibration factors, and where

11       $\rho =$ density of blood,

12       $g =$ acceleration to gravity,

13       $h =$ height difference between the oscillometric and the tonometric

14   measurement sites, and is zero if the patient is supine,

15   MBP is oscillometric mean arterial blood pressure measured at time t_M, &

16   DBP is oscillometric diastolic blood pressure measured at time t_D.

17   In some embodiments, the computer system further calculates a first compliance value

18   based on the calibrated radial pressure waveform, estimates end-effects of the

19   oscillometric signal, and corrects the first compliance value using the estimated end

20   effects.